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| EXAMINER | | | | |
| ENTEZARI, MICHELLE M | | | | |
| ART UNIT | | PAPER NUMBER | | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/511,810

Applicant(s)

BOURGE ET AL.

Examiner

MICHELLE ENTEZARI

Art Unit

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Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 April 2003.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-9 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 19 October 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-855)
Paper No(s)/Mail Date 11/9/05 and 10/19/04
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

1. The disclosure is objected to because of the following informalities: On page 2, lines 25-30 and page 5 lines 5-10, the applicant writes in a non-traditional manner that makes it very difficult to understand what the applicant intends.

Appropriate correction is required.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "96" and "107" have both been used to designate the processing device for carrying out the invention. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if

only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

1. Claims 1, 3-7, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barzykina et al. ("Removal of Blocking Artifacts using Random Pattern Filtering", 1999 IEEE, Barzykina and Ward, pages 904-908) further in view of Fan (US 5495538).

In regard to Claims 1 and 9, Barzykina et al. disclose a method of processing digital images comprising data blocks ("Removal of Blocking Artifacts, title), including a step of determining a homogeneous region which contains two adjacent blocks ($a_{i,j}$, $b_{i,j}$) whose Slope_AB (average ($a_{0,j}$ - $b_{0,j}$)) differs by a value lower than a predetermined threshold (if Var_AB lower than threshold block has blocking artifacts) (section 2.1 p 905 and Figure 1, p 906), and a step of determining a segment to be corrected comprising a set of initial data on either side of a border separating the adjacent blocks (determining the range (width) of filtering, pixels before and after the block boundary whose values are to be altered, Section 2), characterized in that the method further comprises a step of replacing the set of initial data of the segment to be corrected by a set of corrected data, said set being chosen at random from various sets of corrected data (randomize preliminary values of the displacements so filtering produces random-looking (rather than geometric) patterns, add the randomized displacement values to the corresponding pixel values of the reconstructed image, part 2),

Barzykina et al. do not explicitly disclose determining the homogeneous region as the region in which there are two adjacent blocks whose continuous components differ by a value lower than a predetermined threshold, and though it is disclosed the method minimizes discontinuity between pixels within the filtering range (part 2), it is not explicitly disclosed that an average value of a set of corrected data is substantially equal to an average value of the continuous components of the two adjacent blocks.

Based on the applicant's specification (p5 lines 5-10) continuous components are defined as the average value of each block of pixels. Fan discloses determining the homogeneous region as the region in which there are two adjacent blocks (neighboring region pairs) whose continuous components differ by a value lower than a predetermined threshold (Col 6, lines 5-20, lines 55-68). Smoothing can be performed by replacing the individual pixel values by the average (Col 6, lines 15-20), and as a result, the average value of the corrected data will be substantially equal to the average value of the continuous components.

Barzykina et al. and Fan are in the similar art of removing blocking artifacts common in JPEG (Barzykina et al., title and introduction, Fan, Abstract). It would have been obvious at the time of the invention to combine the method of Barzykina et al. with the process described by Fan, because this is a method of reducing blocking artifacts without significantly increasing computation costs (Col 5, lines 5-10).

In regard to Claim 3, Barzykina et al. and Fan disclose a processing method as claimed in claim 1, further characterized in that an average value of one half of the set of corrected data is substantially equal to the average value of the continuous components of the two adjacent blocks, because by replacing the pixels by the average, no matter which side of the pixels are being observed, an average value of the corrected data is substantially equal to the average value of the continuous components of the two adjacent blocks.

The motivation to combine references is given with respect to claim 1.

In regard to Claims 4 and 6, Barzykina et al. and Fan disclose the method of Claim 1. Barzykina et al. further disclose a decoding method and a video decoder intended to produce decoded digital images and comprising a processing method for processing the decoded digital images so as to produce processed digital images ("...JPEG-encoded Lenna image with and without post-processing. After applying our algorithms, the visual quality of the decoded frames is significantly improved," section 3, results).

The motivation to combine references is given with respect to claim 1.

In regard to Claims 5 and 7, Barzykina et al. and Fan disclose the method of Claim 1. Fan further discloses a method of coding digital images in the form of data blocks and a video coder (as indicated by using JPEG blocks and is compatible with JPEG decompression, Abstract), comprising an inverse frequency transformation step followed by a processing step, suitable for processing decoded data blocks coming from the inverse frequency transformation step so as to produce processed data blocks (Fan, Abstract and Claim 1)

2. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barzykina et al. ("Removal of Blocking Artifacts using Random Pattern Filtering", 1999 IEEE,

Barzykina and Ward, pages 904-908) and Fan (US 5495538) as applied to Claim 1 above, further in view of Pan et al. (US 5831872 A).

Barzykina et al. and Fan disclose the method of Claim 1. Barzykina et al. and Fan do not explicitly disclose the replacing step is intended to be applied to the various segments to be corrected overlapping the two adjacent blocks.

Pan et al. disclose, the process "...averages the luminance based pixel values in the decompressed luminance based pixel map signal for the now decompressed overlap component 505 in each pixel map block 420, adjusting each block signals in the luminance based pixel map signal for the entire frame and replaces the pixels in the overlap component 505 of each block and of each adjacent block with the averaged pixel values so as to reduce a "blocking effect" that might otherwise render noticeable the edges between adjacent pixel map blocks 420 in the pixel map 410." (Col 15, lines 30-45).

Barzykina et al. and Fan and Pan et al. are in the similar art of removing blocking artifacts and video processing (Barzykina et al., title and Introduction, Fan, Abstract, Pan et al., Abstract and Col 15, lines 30-45). It would have been obvious at the time of the invention to combine the method of Pan et al. with the process described by Barzykina et al. and Fan, because this is a method of making a blocking effect less noticeable without requiring additional calculation (Col 15, lines 30-45).

3. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barzykina et al. ("Removal of Blocking Artifacts using Random Pattern Filtering", 1999 IEEE, Barzykina and Ward, pages 904-908) and Fan (US 5495538) as applied to Claim 7 above, further in view of Fukuhara et al. (US 6546144 B1).

Barzykina et al. and Fan disclose the apparatus of Claim 7. Barzykina et al. and Fan do not disclose a portable appliance and display for displaying the processed images.

Fukuhara et al. disclose an, "...image display apparatus of the fourth embodiment differs from the image display apparatus of the above-described embodiment since it is directed to a decoding portion. The image display apparatus may, for example, be applied to an Internet terminal, a small-sized portable terminal, fitted with a liquid crystal display, required only to have the decoding, unit such as a set top box or a decoding software module, loaded thereon, a mobile receiver, or a mobile telephone terminal." (Col 10 lines 40-50).

Barzykina et al. and Fan and Fukuhara et al. are in the similar art of image processing (Barzykina et al., Abstract, Fan, Abstract, and Fukuhara et al., Abstract). Barzykina et al. and Fan disclose the claimed invention except for the portable appliance with the processed digital images displayed on the screen. It would have been obvious to one having ordinary skill in the art at the time the invention was made to also be made

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portable, since it has been held that making an old device portable or movable without producing any new and unexpected result involves only routine skill in the art. In re Lindberg, 93 USPQ 23 (CCPA 1952).

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. US 6400844 B1 Fan; Zhigang et al. (using average value difference to define two image planes)
- b. US 20030016864 A1 McGee, Tom et al. (average luminance, threshold)
- c. US 6898329 B1 Takahashi; Sadao (mean luminance, adjacent blocks)
- d. US 6373981 B1 de Queiroz; Ricardo L. et al. (mean luminance, adjacent blocks)
- e. US 7310445 B2 Kupeev; Konstantin et al. (good art for Claim 1, but does not beat priority date)
- f. US 4672437 A Casper; Lawrence A. (replacing pixels by an average)
- g. US 6307980 B1 Quacchia; Marco (mean luminance, adjacent blocks)
- h. US 20010000711 A1 Queiroz, Ricardo L. de et al. (replace with uniform pixels)

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- i. US 6674903 B1 Cliquet; Wim (cover figure)
- j. US 5493416 A Fan; Zhigang (defining a homogeneous region)
- k. US 7155067 B2 Jayant; Nuggehally S. et al. (adaptive edge filtering)
- l. US 20030012453 A1 Kotlikov, Alexei Nikolaevich et al. (replacing pixels by an average)
- m. US 5229864 A MORONAGA K et al. (Claim 1)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHELLE ENTEZARI whose telephone number is (571)270-5084. The examiner can normally be reached on M-Th, 7:30am-5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on (571)272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Jingge Wu/

Supervisory Patent Examiner, Art Unit 2624

/Michelle Entezari/

Examiner, Art Unit 2624